

ACCESS TO CLEAN AND EFFICIENT ENERGY IN DEVELOPING COUNTRIES: THE NEED FOR EU ACTION TO IMPLEMENT SDG7



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ACCESS TO CLEAN AND EFFICIENT ENERGY IN DEVELOPING COUNTRIES

THE NEED FOR EU ACTION TO IMPLEMENT SDG7

Universal access to energy is yet to become a reality. According to the International Energy Agency (IEA), 1.2 billion people currently live without access to electricity.¹

This situation is all the more concerning as access to energy is a prerequisite for economic development and the provision of basic services like lighting and heating of infrastructure, such as schools and hospital facilities, cooking and food preservation. In the words of the former Secretary-General of the United Nations (UN) Ban Ki Moon, "Energy is the golden thread that connects economic growth, social equity, and environmental sustainability".² The implementation of the UN Sustainable Development Goal 7 (SDG7) to "ensure access to affordable, reliable and modern energy for all" is therefore a priority. Its three main targets are to ensure universal access to affordable, reliable and modern energy services, increase substantially the share of renewable energy in the global energy mix and double the global rate of improvement in energy efficiency by 2030.³

Supporting the implementation of SDG7 in developing countries is a priority for the EU's development and cooperation policies. The EU has indeed committed to helping developing countries provide energy access to 500 million people under the framework of the global initiative "Sustainable Energy for all".⁴ Moreover, 30 developing countries, including 15 in Sub-Saharan Africa, have made of energy their focal sector of cooperation with the EU for the 2014-2020 period.

At the same time, developing and least developed countries have reaffirmed their commitment to implement the Paris agreement and limit global warming to well below 2°C above pre-industrial levels, with an aspirational target of 1.5°C.⁵

The need to adopt climate change mitigation measures and to transform the energy sector, which remains the largest contributor to global greenhouse gas emissions, has thus been gathering considerable momentum. This provides an opportunity to implement SDG7 in a way that is consistent with climate objectives. In the "European Consensus on Development", which updates the EU's development policy framework in order to be consistent with the SDGs, the EU and its member states recognise that the objectives of SDG7 and the Paris agreement are interlinked and pledge to pursue them in their development policies.⁶

The EU has the capacity to help developing countries achieve both energy and climate objectives through a mix of instruments, which include financial instruments, partnerships and technical assistance. With the international political and economic context providing opportunities to increase its support, the EU can use the tools at its disposal in a more coherent and efficient way.

The 23rd Conference of the Parties (COP23) meeting in Bonn will be chaired for the first time by a small island state relying on international support to deal with the effects of climate change, the Fiji Islands. Ahead of this meeting, the international community should have a closer look at how EU pledges have been implemented so far and what still needs to be done to improve efforts to achieve SDG7 targets.

1 International Energy Agency (2016), "World Energy Outlook 2016" available at http://www.iea.org/bookshop/720-World_Energy_Outlook_2016

2 United Nations (2012), Press release, SG/SM/14242-DEV/2941-EN/270, ""Secretary-General to Global Development Center: 'Energy is the Golden Thread' Connecting Economic Growth, Social Equity, Environmental Sustainability"", 20 April 2012

3 More information available at <https://sustainabledevelopment.un.org/sdg7>

4 More information available at <http://www.se4all.org/content/european-commission%E2%80%99s-commitment-sustainable-energy-all>

5 The Paris Agreement (2015), Article 2, available at: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf, last accessed on 16 October 2017

6 Council (2017), Joint Statement by the Council and the representatives of the governments of the member states, "The new European Consensus on Development", p.22, 7 June 2017, available at https://ec.europa.eu/europeaid/sites/devco/files/european-consensus-on-development-final-20170626_en.pdf

1. STATE OF PLAY

HURDLES TO OVERCOME

Achieving SDG7 in developing countries will require overcoming a series of obstacles.

UNEVEN PROGRESS ON ENERGY ACCESS

Access to modern energy is increasing across all regions in the world. However, due to the different rate of progress between developing countries this increase is not enough to achieve universal access. While the target is likely to be achieved in Asia, the most significant backlog is in Africa, especially in the Sub-Saharan region.⁷

Progress on access to energy has been **driven largely by Asia**, growing at more than twice the pace of population increase, and even four times faster in South Asia, amounting to an average annual increase of 28 million people gaining access to electricity.⁸ China, a frontrunner in providing access to energy, is experiencing the greatest electrification process in history and has almost achieved universal access to energy.

By contrast, **the African continent is far from achieving universal access to energy**. About 145 million Africans have gained access to electricity since 2000, but there are still some 620 million people who do not have access.¹⁰ The World Energy Outlook 2016 of the IEA shows that while the pace of electrification in this region kept up with population growth, the average annual increase in people gaining access to electricity from 2010 to 2012 – especially in rural areas (26.3%) – is too

low to meet the SDG7 target on electrification.¹¹ At present, per-capita electricity consumption in Sub-Saharan Africa, excluding South Africa, is only 6% of the world's average and is projected to grow by only 14% by 2040. This region will account for more than 90% of the world's population without electricity access.¹² Nonetheless, positive examples of electrification can be found in countries such as Kenya, Malawi, Sudan, Uganda, Zambia and Rwanda, whose electrification rate increased by 2 to 4% a year in the period from 2012-2014.¹³

CHALLENGES IN URBAN AND RURAL AREAS

Urbanisation comes with a series of barriers to energy access. The **high number of people** who move to urban centers can become a challenge. India, for example, having an overall electrification rate of almost 80%, is expecting an additional 10% of its population to become urbanised by 2030.¹⁴ This is equivalent to an approximate 133 million inhabitants that will add to the 33% of India's population currently living in urban areas.¹⁵ Moreover, with regard to the building sector in India, the expected growth of the urbanised population by 2030 will lead to a gap of more than 50% in the needed housing infrastructure and a correlating higher electricity demand.¹⁶ In 2030 the overall energy demand in India is therefore expected to more than double, reaching 1500mtoe compared to 700mtoe in 2010.¹⁷

7 International Energy Agency (2016), "World Energy Outlook 2016" available at http://www.iea.org/bookshop/720-World_Energy_Outlook_2016

8 United Nations (2017), Sustainable Development Knowledge Platform, Sustainable Goal 7, Progress of Goal 7 in 2016, available at <https://sustainabledevelopment.un.org/sdg7>

9 Worldbank's Sustainable Energy Global Tracking Framework 2015, <http://pubdocs.worldbank.org/en/221471455736300738/Final-Presentation-Global-Tracking-Framework-2015-Africa-Energy-Indaba-Launch.pdf>

10 Africa Progress Panel (2016), "Lights Power Action – Electrifying Africa", p.14 available at http://www.africaprogresspanel.org/wp-content/uploads/2017/03/APP_Lights_Power_Action_Web_PDF.pdf

11 International Energy Agency (2016), "World Energy Outlook 2016" available at http://www.iea.org/bookshop/720-World_Energy_Outlook_2016

12 International Energy Agency (2016), "World Energy Outlook 2016" available at http://www.iea.org/bookshop/720-World_Energy_Outlook_2016

13 World Bank (2017), Global Tracking framework 2017 - Progress Towards Sustainable Energy" available at <http://www.worldbank.org/en/topic/energy/publication/global-tracking-framework-2017>, last accessed on 16 October 2017.

14 World Bank (2017), DataBank, Access to electricity, urban (% of urban population), available at <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=IN>, last accessed on 16 October 2017.

15 World Bank (2017), DataBank, Access to electricity, urban (% of urban population), available at <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>, last accessed on 16 October 2017

16 Amit Kumar, Director, Sustainable Habitat Division, The Energy and Resources Institute, India, Presentation at the EP-KAS seminar on "Achieving the Sustainable Development Goal on energy in developing countries – What role for the EU?", 13 September 2016.

17 McKinsey&Company, "India: Towards Energy Independence 2030", January 2014, p.7, available at http://itbaa-gbf.com/wp-content/uploads/2015/08/India_Towards_energy_independence_2030.pdf

Barriers can also be **administrative**. It is estimated that around 863 million people worldwide are living in urban slums or irregular settlements, a number that is growing due to increased urbanisation.¹⁸ It is indeed difficult to achieve SDG7 in these areas, which are not taken into account in urban planning. This results in many urban poor remaining without energy access despite their willingness to pay for good quality energy supply. In addition, **costs** for connecting these settlements with the urban energy supplier are often a barrier to accessing electricity. In Kenya, for instance, over 2 million people lived with unsafe access to electricity in 2014.¹⁹ To address this challenge the Energy Sector Management Assistance Program (ESMAP) launched the Energy Access for the Urban Poor programme in 2014, which aims at increasing and improving electricity access for the poor in urban/peri-urban areas.²⁰ ESMAP is a partnership between the World Bank Group and 17 high-level partners such as the French and Austrian development agencies and the European Commission.²¹

Yet, four times as many people gained access to energy in urban than in **rural areas**. There exists an 80% share of electrification progress in urban areas against a 20% share in rural areas.²² The Alliance for Rural Electrification (ARE) claims that approximately 87% of the people without electricity worldwide live in rural areas characterised by remoteness and sparse population density.²³

LACK OF ATTENTION TO CLEAN COOKING

Providing access to clean fuels and technologies for cooking remains a tremendous undertaking in developing countries. It is estimated that 3 billion people **rely on wood, coal, charcoal or animal waste for cooking and heating**.²⁴ In China, 450 million people are without clean and safe cooking fuel.²⁵ In Africa 80% of energy used in homes in 2014 was for cooking, compared to only 7% in Europe.²⁶ The situation is all the more concerning as indoor air pollution arising from poor combustion of biomass and coal is responsible for over 4 million deaths globally each year, almost all in developing countries.²⁷ The very slow progress in terms of access to clean cooking is partly due to a lack of political attention. Few countries have targets for improving access to energy for meeting basic needs, including modern fuels for cooking and improved cooking stoves. This lack of political buy-in is making it difficult to mobilise financing and incentivise behavioural changes.

POSITIVE DEVELOPMENTS

While achieving SDG7 remains a tremendous undertaking, recent developments provide a positive momentum for its implementation. **A positive momentum for renewables.**

Both the global **production and consumption of renewable energy** have increased in recent years. While the share of renewable energy consumption in total final energy consumption grew from 18.11% to 18.89% during the 2010 to 2014 period, electricity production from renewable power (excluding

18 Cordaid, "UN-Habitat : Number of slum dwellers grows to 863 Million", 10 February 2014, available at <https://www.cordaid.org/en/news/un-habitat-number-slum-dwellers-grows-863-million/>

19 Energy Sector Management Assistance Program (ESMAP), Kenya, available at <http://www.esmap.org/node/2746>, last accessed on 16 October 2017.

20 More information available at http://www.esmap.org/sites/default/files/ESMAP_UrbanPoor_Mar%202017_reformatted.pdf

21 More information available at <http://www.esmap.org/node/70853>

22 World Bank (2015), Presentation, "Progress toward Sustainable Energy- Global Tracking Framework 2015" slide 17, available at <http://pubdocs.worldbank.org/en/221471455736300738/Final-Presentation-Global-Tracking-Framework-2015-Africa-Energy-Indaba-Launch.pdf>.

23 Sustainable Energy For All (SE4ALL) (2015), Progress toward Sustainable Energy- Global Tracking Framework 2015", p.42 available at <http://www.se4all.org/sites/default/files/l/2013/09/GTF-2105-Full-Report.pdf>

24 United Nations (2017), Sustainable Development Knowledge Platform, Sustainable Goal 7, Progress of Goal 7 in 2017, available at <https://sustainabledevelopment.un.org/sdg7>

25 <http://pure.iiasa.ac.at/13467/1/WorldEnergyOutlookSpecialReport2016EnergyandAirPollution.pdf>

26 Smeets, Bram, Tryggstad, Christer, Casteleyn, Henri and Hooghiemstra, Margaret, "Sub-Saharan Africa continues to depend on inefficient cooking technologies", McKinsey&Company, September 2017, available at <https://www.mckinseyenergyinsights.com/insights/sub-saharan-africa-continues-to-depend-on-inefficient-cooking-technologies/>

27 WHO, Media Centre, Fact Sheet N°292, "House-hold air pollution and health", Updated February 2016, available at <http://www.who.int/mediacentre/factsheets/fs292/en/>, last accessed on 17 October 2017.

hydropower) rose from 761 billion to 1.4 trillion kWh during the same period.^{28 29}

In 2015, and for the first time in history, **investments** in renewable energy were higher in developing countries than in developed countries. According to a Renewable Energy Policy Network for the 21st Century (REN21) report, out of the \$286 billion invested on renewable power and fuels globally, \$156 billion took place in developing countries, compared to \$130 billion in developed countries.³⁰ These developing countries include China, India, and Brazil but also Morocco, the Philippines, Pakistan and Honduras, each investing more than \$500 million. Mauritania even came first in terms of investments in proportion to Gross Domestic Product (GDP). The report also identified Bangladesh as the world's largest market for solar home systems and countries like Kenya, Uganda, Tanzania and Nepal are seeing rapid expansion of small-scale renewable systems, including renewables-based mini-grids. One of the reasons for this momentum is the reduced costs of renewables such as solar photovoltaics (PV) and wind power. Poorer countries consider renewables to be cost-effective, even in a period of low fossil fuels prices. This also shows that these countries are fertile ground for renewables, enabling them to **leapfrog** directly to cleaner sources of energy.

Morocco has become a forerunner in the region and serves as model for other African countries in pursuing SDG7. One of its goals is a 42% share of renewables (solar, wind and water energy) in the total national energy mix by 2025. The solar energy programme NOOR aims at constructing several solar power plants. The first solar power plant NOOR I was inaugurated in 2016 and, represents, with a total output of 580 megawatts, one of the

biggest installations of its kind worldwide. The plant complex NOOR I to III is expected to supply 1.3 million people with clean and environmentally friendly energy.³¹

Members of the **Climate Vulnerable Forum** (CVF), comprising 48 developing countries, have declared their intention to switch to 100% renewable energy and achieve net carbon neutrality by 2050.³² This represents an important challenge, especially as these countries will face an increasing energy demand for their economic development.

The Renewable Energy Resource Mapping Initiative from the World Bank provides data on renewable energy resource potential in developing countries looking at biomass, small-scale hydropower, solar and wind.³³ The information enables government planning and site scoping for commercial developers. In 2017, the Global Solar Atlas, presenting the latest solar resource data worldwide was launched.³⁴ Initiatives such as these contribute to the development of large and small-scale clean energy infrastructure in Africa. Strong political will, good governance and financing are also crucial elements for the successful development of projects.

IMPROVEMENTS IN ENERGY EFFICIENCY

Improvements in energy efficiency are necessary to lower emissions and achieve energy security in developing countries, which are experiencing an increase in their energy demand. Recent developments in this field give cause for optimism.

Developing countries, accounted for around 68% of the savings in energy intensity worldwide from 2010

28 World Bank (2017), DataBank, Renewable energy consumption (% of total final energy consumption), available at <https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS>, last accessed on 17 October 2017. <https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS>

29 World Bank (2017), DataBank, Electricity production from renewable sources, excluding hydroelectric (kWh), available at <https://data.worldbank.org/indicator/EG.ELC.RNWX.KH>, last accessed on 17 October 2017.

30 Sawin, Janet, Seyboth, Kristin, Sverrisson, Freyr, "Renewables 2016 – Global Status Report", REN21, p.29 The figures do not include large hydropower schemes and heating and cooling technologies

31 Reifeld, Helmut, "COP22 : Marokko ist schon an-gekommen", KAS, 16 February 2016 Available at http://www.kas.de/wf/doc/kas_44219-1522-1-30.pdf?160216120006

32 More information at <http://www.thecvf.org/web/climate-vulnerable-forum/cvf-participating-countries>

33 More information at http://www.esmap.org/RE_Mapping

34 More information at <http://globalsolaratlas.info/>

to 2012, especially due to progress in Eastern Asia.³⁵ According to Chinese Prime Minister Li Keqiang, China's energy consumption per GDP unit, for example, decreased by 5% in 2016 and is expected to be reduced by another 3.4% by 2017.³⁶

Developing and emerging economies seem determined to further progress in this area as 67 of them have set **energy efficiency targets**. For instance, ASEAN countries committed to reduce energy intensity by 20% in 2020 compared to 2005.³⁷ These energy efficient targets either aim to improve energy intensity or increase energy savings. 38% of these targets are cross-sectoral while others focus on specific sectors, including lighting (26%) and buildings (21%).³⁸

Countries resort to a **mix of instruments** in order to achieve these targets including national action plans, standards, labels, monitoring and energy auditing. Countries in Asia have conducted programs seeking to increase energy gains by incentivising consumers to choose products which consume less energy. The Domestic Efficient Lighting Programme (DELP) launched in India in 2015 provides an interesting example.³⁹ Light-emitting diode (LED) lamps bought through bulk procurement by public utilities are distributed to consumers at low prices, which are then integrated in electricity bills. The programme aims to provide 700 million lamps across 100 cities.⁴⁰

In order to address an annual energy demand growth rate of about 7%, Ghana implemented an efficient lightbulb replacement programme for households, aiming at "reducing peak electricity demand, brownouts and transformer overloads". In

only three months, six million compact fluorescent lamps were handed out for free and millions of old incandescent lights collected in turn. As a result 124 megawatts was saved at peak times, which equals about \$300 million in power plant investment.⁴¹ This type of initiative is facilitated by the reduction of LED prices.

Despite this positive momentum more needs to be done. The current rate of progress is simply insufficient to reach the goal of doubling the global rate of improvement in energy efficiency by 2030.

The interlinkages between energy access and renewables targets in rural areas

Pursuing energy and climate objectives simultaneously requires an integrated approach between energy access and renewables. **The energy access and renewables targets are intertwined and can even be mutually reinforcing.** The IEA stresses the existing link between energy access and renewables by claiming that universal access to electricity by 2030 can only be achieved, if more than half of new electricity capacity comes from off grid and mini grid solutions, of which 90% shall use renewable energy sources. This would include solar home systems with several watts of capacity as well as kilowatt-scale biomass mini grids that serve entire communities.⁴²

Rural areas exemplify the opportunities of combining energy access and renewables. Off-grid renewable energy and mini-grid systems are effective solutions to address the lack of energy in these areas that often do not have the necessary energy infrastructure. Energy is mainly generated by small solar panels, hydropower and wind turbines. These technologies are cost-effective with long life spans and low operational and maintenance costs. Mini grids also have the advantage of being deployed faster than centralised grids and can be upgradeable in case of an increase in energy demand. However, electrification through mini-grid

35 UN, Economic and Social Council, "Progress towards the Sustainable Development Goals, Report of the Secretary General", 3 June 2016, p.12

36 Xinhuanet, "China is targeting a 3.4 per cent re-duction in energy intensity in 2017", 5 March 2017, available at http://german.xinhuanet.com/2017-03/05/c_136104253.htm, last accessed on 17 October 2017.

37 UNEP, the 1 Gigaton Coalition, Norwegian Ministry of Foreign affairs (2016), "Renewable energy and energy efficiency in developing countries: contributions to reducing global emissions", p.17

38 Ibid

39 More information available at <http://pib.nic.in/newsite/mbErel.aspx?relid=114328>

40 Amit Kumar, Director, Sustainable Habitat Division, The Energy and Resources Institute, India, Presentation at the EP-KAS seminar on "Achieving the Sustainable Development Goal on energy in developing countries – What role for the EU?", 13 September 2016.

41 IEA, Newsroom, "Energy Efficient Prosperity: Expanding Energy Access", 13 October 2016 available at <https://www.iea.org/newsroom/news/2016/october/energy-efficient-prosperity-expanding-energy-access.html>, last accessed on 17 October 2017.

42 IEA (2011), "World Energy Outlook 2011", p.487, available at https://www.iea.org/publications/freepublications/publication/WEO2011_WEB.pdf;

systems will require important financial investments and reliable business conditions for private investors, whereas solar home systems are more easily fundable for the private end user.

The Fondazione Madre Agnese Manzoni set up a project to power water pumps in Lower Congo. The system consists of solar panels, electronic batteries and low consumption pumps. Solar energy is used to recharge the batteries and directly power the pumps while wind is used during the night. Systems are installed in huts situated perpendicularly to the water source and connected to the other huts through pipelines. These systems are also self-sustainable as inhabitants are trained to run and maintain the pipeline and solar panels.⁴³ This project illustrates not only the opportunities offered by the combination of decentralised energy sources in rural areas but also that the implementation of SDG7 also enables the achievement of other sustainable development objectives, in this case access to safe drinking water.

Ambitious long-term energy planning for rural electrification can bring about significant benefits at national level. In this context Morocco stands out, with its ambitious programme for access to renewable energy in rural areas. The country has been implementing a rural electrification programme (PERG) since 1996, which had provided electricity to 39,000 villages and more than 12.5 million inhabitants up to 2015, including through photovoltaic installations, bringing the rate of rural electrification up to 99.0%.⁴⁴

2. NECESSARY ACTIONS

Progress in renewable energy and energy efficiency provides a positive dynamic to reach both SDG7 and climate targets. However, reaching these objectives will require a coherent approach and increased

action from all actors.

The EU is a crucial actor in this endeavor, and has a number of policy tools at its disposal. As the leading donor in energy development cooperation, it can mobilise a mix of financial instruments like grants and loans and further engage with the private sector, including through the External Investment Plan (EIP). The EU has also demonstrated its support to developing countries through open dialogue and technical assistance. Yet, the EU can make better use of these tools and do more to support developing countries to achieve SDG7 in a way that is consistent with climate objectives.

COOPERATING BASED ON NATIONAL DETERMINED CONTRIBUTIONS (NDCs) AND LONG-TERM DECARBONISATION STRATEGIES

The implementation of the Paris international climate agreement provides an opportunity to enhance cooperation between developed and developing countries.

Countries are either in the process of converting their Intended Nationally Determined Contributions (INDCs) into National Determined Contributions (NDCs) or have already presented their NDCs.⁴⁵ These contributions, which identify the actions governments will take to implement the agreement, can serve as a basis for cooperation. As the implementation of the Paris agreement is a common effort, there is an opportunity for developed countries, including the EU, to help developing countries to implement their NDCs and put in place ambitious **long-term decarbonisation strategies**. Members of the Climate Vulnerable Forum (CVF) for example, will rely on international cooperation to turn their pledge to switch to 100% renewable energy between 2030 and 2050 into reality. Given their vulnerability to the effects of climate change, these countries also need international support to develop climate adaptation projects.

The Council Conclusions on "European Climate diplomacy after COP 21" of 15 February 2016 highlighted the importance of climate diplomacy to support the implementation of INDGs in the context of low-emission and climate-resilient development

⁴³ More information at <https://www.ruralelec.org/project-case-studies/fondazione-madre-agnese-water-sources-homes-democratic-republic-congo>

⁴⁴ ESI Africa, "Rural electrification: Morocco to power 940 remote villages", 19 March 2015, available at <https://www.esi-africa.com/news/rural-electrification-morocco-to-power-940-remote-villages/>, last accessed on 17 October 2017.

⁴⁵ More information available at http://unfccc.int/focus/ndc_registry/items/9433.php

and advocated for public and private financial flows consistent with lowering emissions.⁴⁶ The EU should also ensure its development policies are consistent with long-term decarbonisation plans in developing and least developed countries.

SCALING UP AND EFFICIENTLY TARGETING FINANCE

Investments in energy access reached over \$13 billion in 2013, but according to UN estimates an average of \$49.4 billion per year is needed in order to achieve the 2030 target. As for the other targets, up to \$650 billion annually is needed for renewables and \$560 billion for energy efficiency.⁴⁷

The EU is the largest donor in energy development cooperation, accounting for a quarter of the total €91 billion energy-related Official Development Assistance (ODA). The EU and its member states spent over €22 billion for the 2010-2014 period, €9.2 billion was used to finance renewable energy projects and €3.1 billion to support non-renewable energy sources, including gas, nuclear and coal power.⁴⁸ While the fact that the majority of funds are directed towards renewable energy projects constitutes a positive development, the EU and its member states should stop supporting coal power as it is inconsistent with the Paris climate objectives.

Given the challenges in this region, the EU will have to **focus on sub-Saharan Africa especially. It has** the lowest energy access worldwide.

While sub-Saharan Africa received €4.4 billion of European energy-related ODA during the 2010-2014 period, the ten countries that received the most of this ODA are mostly emerging economies. India, Morocco, Turkey, Egypt, Kenya, Ukraine, Vietnam and Brazil accounted for more than half of

the overall European energy related-ODA. Out of these ten countries only India and Kenya have an electricity access rate which is lower than 90%.⁴⁹ The EU must therefore increasingly target the least developed countries, including those in the sub-Saharan region.

Energy infrastructure in the 48 countries of Sub-Saharan Africa is unfit to deliver SDG7 objectives and clean energy sources remain largely underexploited in the region. In 2012, 90GW – the same amount of energy produced in a country like Spain – was generated for a population of 800 million.⁵⁰ Nonetheless, a country like Ethiopia, which uses mostly hydropower combined with investments in wind, energy and geothermal data shows that the development of clean infrastructure in this region is achievable.

The EU-Africa Infrastructure Trust Fund combines grants and loans from EU and member states with the lending capacity of banks, such as the EIB, in support of local infrastructure projects.⁵¹ Overall, out of the €3.3 billion worth of grants that the EU will allocate for the 2014-2020 period to support sustainable energy projects, €2 billion will be directed to African countries.⁵²

The Energising Development (EnDev) partnership is a multinational energy access initiative comprising six financing countries, the Netherlands (MFA NL), Germany (BMZ), Norway (MFA NO), UK (DFID), Switzerland (SDC) and Sweden (SIDA). The partnership has taken a prominent role in “promoting access to Sustainable Energy for All” and is active in 25 countries in Africa, Asia and Latin

46 General Secretariat of the Council, «European climate diplomacy after COP21 – Council conclusions (15 February 2016)», 6049/16, available at <http://data.consilium.europa.eu/doc/document/ST-6061-2016-INIT/en/pdf>, last accessed on 8 July 2017.

47 Sustainable Energy for All (2015). “SE4ALL Advisory Board’s Finance Committee Report on Scaling up Finance for Sustainable Energy Investments”, last accessed 23 October 2017 available at <http://www.se4all.org/sites/default/files/SE4All-Advisory-Board-Finance-Committee-Report.pdf>, p.3

48 European Union Energy Initiative Partnership Dialogue Facility (2017) “The European Portfolio on Energy in International Development Cooperation” last accessed 23 October 2017 available at http://www.euei-pdf.org/sites/default/files/field_publication_file/the_european_portfolio_on_energy_in_international_development_cooperation_euei_pdf_2017_0.pdf.

49 European Union Energy Initiative Partnership Dialogue Facility (2017) “The European Portfolio on Energy in International Development Cooperation” last accessed 23 October 2017 available at http://www.euei-pdf.org/sites/default/files/field_publication_file/the_european_portfolio_on_energy_in_international_development_cooperation_euei_pdf_2017_0.pdf.

50 Anyangwe, A. (2014). “Without energy could Africa’s growth run out of steam?” last accessed, 2 October 2017, available at: <https://www.theguardian.com/global-development-professionals-network/2014/nov/24/energy-infrastructure-clean-cookstoves-africa>.

51 European Union Africa Infrastructure Trust Fund (n.d.) “10 years of the EU-AITF involvement on the ground” last accessed 23 October 2017 available at <http://www.eu-africa-infrastructure-tf.net/>.

52 European Commission (September, 22 2017) Press Release: EU boosts its cooperation on sustainable energy with developing countries” last accessed 23 October 2017 available at http://europa.eu/rapid/press-release_IP-14-1026_en.htm.

America. The initiative aims to provide sustainable access to modern energy services for households, social institutions and SMEs “by establishing economically sustainable energy solutions and distribution schemes, mainly for rural communities.” Moreover, the “programme promotes the extension and densification of power grids, the installation of hydropower plants and distribution of solar home systems. EnDev also helps to establish self-sustaining markets for the production and sale of improved (more efficient) cooking stoves”.⁵³

PRIVATE SECTOR ENGAGEMENT

Scaling up financing from private sources and mobilising various financing instruments is necessary to achieve SDG7 targets effectively.

Private sector investments are a much needed source of financing as public money alone will be insufficient to reach the SDG7 targets. An example of a private sector involvement is the Schneider Access to energy programme.⁵⁴ The initiative intends to provide safe and clean electricity to communities by actively involving local stakeholders, including residents, end consumers, and beneficiaries. The programme includes investment funds for innovative local energy entrepreneurship and vocational trainings, both technical and business, to address local skill shortages. The company aims to bring electricity to a million homes in Sub-Saharan Africa by 2025, including through the €54.5 million Energy Access Ventures public-private fund.⁵⁵

In “the European Consensus for Development”, the EU and its member states have stated their intention to leverage private finance and increase their cooperation with the private sector on energy demand management, renewable energy generation and clean technology development and transfer. They are also committed to promoting private sector accountability

in the field of safe and secure energy.⁵⁶ **The External Investment Plan (EIP)**, which was presented in September 2016, is the European Commission’s new strategy to stimulate private sector investments in Africa and the EU Neighborhood region. This will be done across different socio-economic sectors and by focusing on energy efficiency and renewable energy projects. The EIP is expected to mobilise more than €44 billion by 2020.⁵⁷ The European Commission should use this instrument to promote policy coherence for development and ensure that the projects that are funded contribute to achieving both the SDG7 targets and the climate objectives set in Paris. Private sector accountability should also be ensured in line with the commitments made in “the European Consensus for Development”. Moreover, the EIP should match the European Investment Bank’s (EIB) commitment to allocate 35% of its financing in developing countries to climate change adaptation and mitigation projects.⁵⁸

The German minister for cooperation and development, Gerd Müller, proposed a “Marshall Plan *with Africa*”, which puts special focus on reforms which shall help to boost the better involvement of the private sector for the benefit of Africa’s development. In detail, the document refers to the need of improving the situation in Sub-Saharan Africa where only 32% of the population has access to energy. As a response to this, the proposal aims to take advantage of Africa’s opportunity to expand its energy supply on the basis of renewables. Existing technologies to produce renewable energy and an adequate political framework are considered to be attractive enough to spur investments to achieve energy access for 90% of the population by 2030.⁵⁹

53 Energising Development (n.d.) “About Energising Development” last accessed 23 October 2017 available at https://endev.info/content/Main_Page.

54 Schneider Electric SE (2016) “Access to Energy” last accessed 23 October 2017 available at <https://sustainabledevelopment.un.org/content/documents/11432Schneider%20-%20Access%20to%20Energy.pdf>

55 White, S. (2015) “The plan to electrify Africa takes shape” last accessed 23 October 2017 available at <https://www.euractiv.com/section/development-policy/news/the-plan-to-electrify-africa-takes-shape/>.

56 European Union (n.d.) “The new European Consensus on Development ‘Our World, our dignity, our future’” last accessed 23 October 2017 available at https://ec.europa.eu/europeaid/sites/devco/files/european-consensus-on-development-final-20170626_en.pdf.

57 European Union (n.d.) “EU External Investment Plan” last accessed 23 October 2017 available at https://ec.europa.eu/europeaid/sites/devco/files/factsheet-eu-external-investment-plan-20170710_en.pdf

58 Europäische Investitionsbank (n.d.) „Klima- und Umweltschutz für unsere Zukunft” last accessed 23 October 2017 available at <http://www.eib.org/projects/priorities/climate-and-environment/index.htm>.

59 Federal Ministry for Economic Cooperation and Development (BMZ) (2017) “Africa and Europe- A new partnership for development, peace and a better future” last accessed 23 October 2017 available at https://www.bmz.de/en/publications/type_of_publication/information_flyer/information_brochures/Materialie270_africa_marshallplan.pdf; §4.3.

Affordability is also a key factor to guarantee access. Investors and energy companies need to find the right balance between profitability and providing electricity at a price that is acceptable to the population. Installing a grid is not enough because people still need the money to afford the service. Money must therefore be well spent and targeted towards projects that will benefit the populations that are the most in need, in accordance with the "leave no one behind" principle.

FINANCING OFF-GRID AND DECENTRALISED ENERGY IN RURAL AREAS

Most energy-related financing is directed to large infrastructure projects, which have a higher financial return on investment. In contrast, finance is currently lacking in decentralised energy projects. According to the IEA, 64% of required additional investment in energy should go to mini grid and off-grid solutions.⁶⁰ The IEA estimates that an additional \$23 billion per year up to 2030 is needed to guarantee decentralised renewable energy access. Yet only 0.2% of that sum, \$51 million, was allocated to these projects between 2005 and 2016.⁶¹ Given the importance of off-grid and decentralised renewable energy to achieve energy access in rural areas, the funding gap in this area must be filled.

The EU initiative Electrifi, launched in 2015, aims at providing sustainable energy access in developing countries to populations living mostly in rural areas.⁶² It seeks to overcome the lack of access to finance by granting mid and long term capital for decentralised energy solutions to the private sector. The first round of applications leveraged a total of €8.5 billion in investments for 290 project proposals across 55 countries, including

35 in Africa.^{63 64} In addition to Electrifi, the ACP-EU Energy Facility, a co-financing instrument with an overall budget of €445 million for the 2006-2013 period, supported projects aimed at increasing and improving access to modern, affordable and sustainable energy services for the rural poor in African, Caribbean and Pacific countries. Building on this success, the second call under the ACP EU Energy Facility II resulted in the financing of 22 projects with a budget of €55 million.⁶⁵ Given the important financing gap for decentralised energy projects, the EU should also allocate funds for these projects through the EIP.

Innovative processes can also yield interesting results. "Pay-as-you-go" (PAYG) business models are gaining traction. This business model enables consumers to rent a solar home system, which includes a battery, a charge controller, a solar panel, LED bulbs and a mobile charger. These affordable systems have the advantage of enabling consumers that do not have a bank account or cannot take out loans to have access to electricity. They are particularly attractive in areas not covered by the grid, including in rural areas or informal settlements in urban areas. Out of the \$511 million of investments that went to off-grid solar market up to 2015, almost \$160 million were directed towards PAYG companies.⁶⁶ Startups in rural Africa that mix solar power and technology have grown. They offer leasing that allow people to light their homes, run a television, a refrigerator and air conditioning. The client pays a monthly fee by phone and after a set number of years becomes the owner of the equipment.⁶⁷ As the new European Consensus on Development seeks to address energy poverty

60 CAFOD (2016) « UK support for energy in developing countries » last accessed 23 October 2017 available at <https://cafod.org.uk/content/download/27353/269740/version/3/file/Policy%20briefing%202016%20006.pdf>

61 Rai, N., Best, S. & Soanes, M. (2016) "Unlocking climate finance for decentralized energy access" last accessed 23 October 2017 available at <http://pubs.iied.org/pdfs/16621IIED.pdf>

62 <http://electrifi.org/what-we-do/>

63 European External Action Service (n.d.) "Electrification Financing Initiative – Electrifi" last accessed 23 October 2017 available at https://eeas.europa.eu/sites/eeas/files/electrifi_201702_0.pdf

64 Electrification Financing Initiative (2017) "EDFI Management Company" last accessed 23 October 2017 available at <http://electrifi.org/who-we-are/edfi-management-company/>.

65 Danish Energy Management (2015) "New Projects Contracted under the ACP-EU Energy Facility II" last accessed 23 October 2017 available at <http://energyfacilitymonitoring.eu/new-projects-contracted-under-the-ACP-EU-energy-facility-ii/>.

66 Bloomberg New Energy Finance (2016) "Off-Grid Solar Market Trends Report 2016" last accessed 23 October 2017 available at <https://about.bnef.com/blog/off-grid-solar-market-trends-report-2016/>

67 Guilbert, K. (2017) "Beyond light, solar startup seeks to plug in rural homes in Africa" last accessed 23 October 2017 available at <http://www.reuters.com/article/us-energy-africa-startup-idUSKBN17904X>

by making available clean and renewable energy “through community-led, off-grid or mini-grid solutions”, especially in rural areas, more financial attention should be given to such innovative solutions and their implementation in order to ensure that they remain affordable and do not create debt for users.⁶⁸

It is also worth looking at **innovative financing mechanisms** used in other sectors to determine whether they could be replicated. For instance good practices exist in the water sector. The Oudin Santini law, adopted in 2005 in France, enables local authorities and water agencies to allocate up to 1% of their resources to water and sanitation projects in developing countries. This mechanism helped mobilise €150 million between 2006 and 2013.⁶⁹ In order to finance such projects, the NGO WaterAid and the water industry in the UK cooperated and sent leaflets with appeals for donations to consumers along with their water bill raising £123 million since the early 90s.⁷⁰ Member states could encourage local authorities and energy utilities to develop similar mechanisms to finance off-grid and decentralised energy projects.

THE EU'S ROLE IN ENHANCING DIALOGUES AND PARTNERSHIPS

The cooperation between the EU and developing countries involves technical assistance and policy dialogues. Key objectives of EU action are the reinforcement of policy dialogues with third countries on energy, the initiation and achievement of policy reforms, political commitments to the respective targets of SDG7 and awareness campaigns on renewable energy.⁷¹ EU action must be effectively executed by coordinated and target-

oriented public climate diplomacy and also include the parliamentary delegations on a political level.

An instrument used by the EU and its member states is the **EUEI Partnership and Dialogue Facility (EUEI-PDF)** which facilitates the energy dialogue and knowledge transfer.⁷² It advises partners to create enabling environments for sustainable energy solutions and supports the development of sustainable energy markets. Moreover, it conducts and promotes research, innovation and capacity development. The EU is taking the EUEI forward through open dialogue with partner countries at country level through its delegations and member states' country offices. The EUEI-PDF is working with developing countries to integrate energy as a general component into EU development programmes, such as for example through the Africa-EU Energy partnership (AEEP).⁷³ Partner country ownership of these activities is a key feature. Local participation by end users, communities, businesses and other stakeholders is encouraged at the planning and implementation stages.

The EU also set up a **Technical Assistance Facility (TAF)** for the Sustainable Energy for All (SE4All), which focuses on country-specific actions, helping developing countries to set up country action plans for energy and carry out the regulatory reforms that are needed to raise the necessary private capital to implement these plans.⁷⁴

The need to empower local communities including through capacity building is a crucial ingredient

68 European Union (n.d.) "The new European Consensus on Development 'Our World, our dignity, our future'" last accessed 23 October 2017 available at https://ec.europa.eu/europeaid/sites/devco/files/european-consensus-on-development-final-20170626_en.pdf.

69 Noblot, C., Presentation for the EPC –European Commission Workshop, "Innovative partnerships and financing mechanisms: A means to deliver better access to drinking water and sanitation in developing countries", pS-Eau, 10 March 2015, Brussels (available at http://www.epc.eu/prog_forum_details.php?cat_id=12&pub_id=5613&prog_id=2&forum_id=33; last accessed on: 25 November 2015)

70 More information at WaterAid (2014), "Annual Report and Financial Statements 2013-14", London

71 Addressing the lack of energy, increasing energy efficiency and generation of renewable energy

72 EU Energy Initiative Partnership Dialogue Facility (EUEI PDF) (n.d.) "EU Energy Initiative Partnership Dialogue Facility" last accessed 23 October 2017 available at <http://www.euei-pdf.org/en>

73 Africa-EU Energy Partnership (2016) "Second Stakeholder Forum" last accessed 23 October 2017 available at <http://www.aEEP-forum.org/>; EUEI PDF (n.d.) "About AEEP" last accessed 23 October 2017 available at <http://www.euei-pdf.org/en/aEEP>

74 DG International Cooperation and Development (n.d.) "The European Union's Technical Assistance Facility (TAF) for the Sustainable Energy for All (SE4ALL)" last accessed 23 October 2017 available at https://ec.europa.eu/europeaid/sites/devco/files/leaflet-taf-2015_en.pdf; European Commission (2017) "The European Union's Technical Assistance Facility (TAF) for the Sustainable Energy for All (SE4ALL)" last accessed 23 October 2017 available at <http://ndcpartnership.org/tools-and-resources/funding-and-initiatives-navigator/european-union%E2%80%99s-technical-assistance-facility>; https://ec.europa.eu/europeaid/sites/devco/files/aap-financing-regionalcaribbean-annex3-2016-20161007_en.pdf

for the success of these activities.⁷⁵ Civil society organisations should therefore be considered as an important partner entity given their ability to engage with poor communities and ensure the efficient implementation of projects on the ground.

USING THE G20 AS A FORUM FOR INCREASED ACTION AND COOPERATION

The G20 is an important forum for cooperation, increased dialogue and the promotion of investments for renewable energy.

The Ethiopian president of the Vulnerable Twenty Group of Ministers of Finance (V20) proposed a formal **V20-G20 dialogue platform** of joint action to achieve the group's ambitious goal of achieving net carbon neutrality and 100% use of renewable energy by 2020.⁷⁶ The initiative was presented to Germany's chancellor Angela Merkel in an open letter urging for more cooperation for climate action during Germany's G20 presidency which is running from 1 December 2016 to 30 November 2017. This call led to the first "V20 Dialogue with High Level G20 representatives" during the Spring Meetings of the International Monetary Fund and the World Bank Group in Washington, where both groups agreed to work closer together "on many important issues on climate change" and "shared a strong commitment to the ambitious implementation of the Paris Agreement".⁷⁷

It is therefore very positive that the meeting of G20 finance ministers in April 2017, chaired by Germany in cooperation with the World Bank, the International Monetary Fund and the African Development Bank, launched the "Compact with

Africa" initiative, which promotes private and infrastructure investments in Africa.⁷⁸ At the G20 Summit in Hamburg, German chancellor Angela Merkel confirmed her intention to implement this agreement, which provides customised land-to-land investment agreements between rich industrial states and interested African states.⁷⁹ Seven African countries have joined the initiative so far: Côte d'Ivoire, Ethiopia, Ghana, Morocco, Rwanda, Senegal and Tunisia. The initiative is imbedded in the "**New G20-Africa-Partnership**", which aims to deepen the cooperation among G20 countries and Africa in the context of sustainable economic development. The Agenda 2063 of the African Union serves as a basis for this cooperation. It is a strategic framework for the socio-economic shift over the next decades. It focuses on accelerating the implementation of initiatives for growth and sustainable development.⁸⁰ The partnership provides a framework for G20 initiatives in the area of investment on the promotion and development of renewable energies and resilience against climate change in Africa.

Another official G20-initiative from the business sector, think tanks and the civil society stands up for an ambitious implementation of the G20 energy and climate agenda. A declaration of the chairs of this task force advocates for a phase-out of fossil fuel subsidies by 2025 combined with a related annual reporting.⁸¹ Promoting such a phase-out will have positive effects on common efforts to push the international agenda on SDG7. The EU and its member states have also expressed their intention to do so in the "European Consensus on Development".

Moreover, the G20 engages in developing a sustainable energy balance in the energy sector,

75 International Partnership on Mitigation and MRV (n.d.) "Collaborating to align data, information and mitigation actions" last accessed 23 October 2017 available at https://www.transparency-partner-ship.net/sites/default/files/tunisia_gpa_long_0.pdf.

76 United Nations (2017) "We strive to lead", climate-vulnerable countries declare at COP22" last accessed 23 October 2017 available at <http://www.un.org/sustainabledevelopment/blog/2016/11/we-strive-to-lead-climate-vulnerable-countries-declare-at-cop22/>.

77 Hansen, G. (2017) „David meets Goliath: First ever V20 – G20 meeting highlights the mutual benefits of climate action" last accessed 23 October 2017 available at <https://germanwatch.org/en/13801> ; <http://www.v-20.org/wp-content/uploads/2017/04/1st-V20-Dialogue-with-High-Level-G20-representatives-%E2%80%93Chairs-Summary-%E2%80%93Rm-copy.pdf>

78 Federal Ministry of Finance (n.d.) "G20 Compact with Africa" last accessed 23 October 2017 available at <http://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Topics/Featured/G20/2017-03-30-g20-compact-with-africa.html>.

79 Delcker, J. (2017). "Angela Merkel's Neighborly Plan for Africa" last accessed 23 October 2017 available at http://www.politico.eu/article/angela-merkels-neighborly-plan-for-africa/?utm_source=POLITICO.EU&utm_campaign=507e41e3dd-EMAIL_CAMPAIGN_2017_07_11&utm_medium=email&utm_term=0_10959edeb5-507e41e3dd-189889709

80 <https://au.int/en/agenda2063>

81 http://blog.t20germany.org/wp-content/uploads/2017/03/20170322_B-C-T-20-Joint-Statement-Climate-and-Energy_FINAL.pdf B20, C20 and T20 Climate and Energy Working Groups: Statement for a sustainable energy transition.

supporting the **Africa Renewable Energy**

Initiative (AREI) of the African Union (AU). The AREI, launched in Paris in December 2015, aims at delivering at least 10 gigawatt of “new and additional” electrical installed capacity by 2020 with an aspirational goal of 300 gigawatt by 2030.⁸² The German ministry for economic development and cooperation (BMZ) financially supports the initiative with up to \$3 billion until 2020. The promised BMZ commitments will further the installations of 2.5 gigawatt of renewable electricity generation, equivalent to three coal-fired power plants. Thus it will help to accelerate the initiative’s overall goal by implementing 10 gigawatt by 2020.⁸³

The AREI holds great potential in facilitating the transition of African countries towards increased renewable energy and enabling them to leapfrog towards low-carbon technologies through a set of actions. These include strengthening policy, regulatory and incentives frameworks, capacity building, mobilising financing and multi-stakeholder engagement. On 4 March 2017, the AREI Board of Directors presented a list of 19 renewable energy projects with an EU contribution of €300 million expected to leverage a total investment sum of €4.8 billion.⁸⁴ The list includes large solar and hydropower infrastructure projects as well as rural electrification projects.⁸⁵ Beyond installed capacity, SDG7 indicators of the proportion of the population gaining access to electricity, the share of renewable energy in the total final energy consumption and other development indicators (like the number of jobs created) should be used to assess the success of the initiative. While the EU’s contribution is crucial in terms of financing and technical expertise, the ownership of projects by local populations is key.

CONCLUSION

The establishment of a Sustainable Development Goal on energy has put a spotlight on the challenges faced by developing countries in terms of access to affordable, clean and reliable energy. Too many people still lack access to energy, which is a necessary step towards economic development and the realisation of a series of other development goals. Moreover, commitments made by developing countries during the Paris climate conference make it imperative for them to meet the rising energy demand through the development of renewable energy and energy efficiency projects. Despite positive trends, such as increased investment in renewable energy and improvements in energy efficiency, developing countries will still need to rely on the support of developed countries to achieve this goal.

The EU has made the implementation of SDG7 one of its priorities. It has proven itself as a reliable partner for the provision of financial and technical assistance for energy projects. The “European Consensus for Development” demonstrates that there is political will to scale up efforts to support developing countries in this field. The EU must continue to cooperate with developing countries by helping them to implement their NDCs and long- term decarbonisation plans, place a particular emphasis on Sub-Saharan Africa, increase the mobilisation of diverse financial resources, including through private sector involvement, empower local communities and enhance partnerships using various forums like the G20. A balance must be struck between supporting the development of clean infrastructure projects and providing clean energy to the poorest through decentralised and off-grid energy solutions. The External Investment Plan provides the Commission with an additional instrument in this endeavor. However, it is paramount for the EU to use this instrument to promote policy coherence and thus ensure that climate and energy objectives can be met simultaneously.

82 Africa Renewable Energy (2017) “AREI Africa Re-newable Energy” last accessed 23 October 2017 available at <http://www.arei.org/>

83 Deutscher Bundestag (2017) „Entwicklungspolitische Bericht der Bundesregierung“ last accessed 23 October 2017 available at <http://dipbt.bundestag.de/doc/btd/18/123/1812300.pdf>, p.142.

84 European Commission (2017) “Europe strongly advancing renewable energies in Africa” last accessed 23 October 2017 available at http://europa.eu/rapid/press-release_IP-17-442_en.htm.

85 Ministère de la Transition écologique et solidaire (2017) last accessed at 23 October 2017 available at <http://www2.developpement-durable.gouv.fr/A-Conakry-Segolene-Royal-salue-l.html>.

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